

## Eurasian Water Milfoil



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## Exotic Eurasian Water Milfoil

- 11 Native Species of Water-milfoil in North America.
- 7 Native Species of Water-milfoil in Wisconsin
- EWM Native to Asia and Europe
- EWM Arrived in US in 1942 & Wisconsin in 1960s



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## EWM range in Wisconsin



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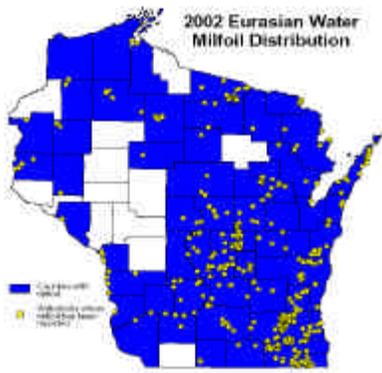
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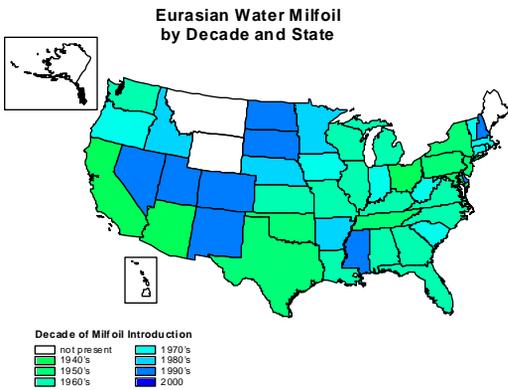
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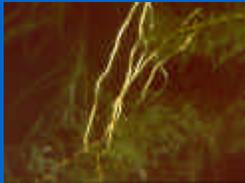
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## Out Competing Native Plants

- Reproduces by seeds, runners & fragmentation
- Begins to grow at colder temperatures and lower light levels
- Possesses canopy growth pattern
- Not susceptible to native pathogens




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## Negative Impacts of Eurasian water-milfoil

- Recreation
- Reduced Biodiversity
- Poor Fish & Wildlife Habitat
- Thermal Stratification
- Oxygen Stratification



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## Monitor and Quarantine

- Low cost option
- High risk of continued spreading of plant
- Markers and/or buoys require local ordinance approval



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Map the milfoil beds.

• Is it an isolated bed?

• Is it over the entire lake

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### EWM Control Methods

- Mechanical
  - Manual (raking or diving)
  - Harvesting
  - Dredging
- Physical
  - Drawdown
  - Bottom Barriers
- Chemical
  - Selective
  - Contact
- Biological
  - Weevil

Generally Used in WI



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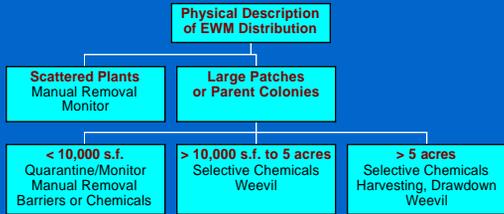
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## EWM Management Phases



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## Regulations

- Manual control of exotics is not regulated
- Chemical applications regulated by NR 107
- Mechanical harvesting regulated by NR 109
- Weevils require a stocking permit
- Drawdown, dredging and barriers require Ch. 30 permit



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## Diving/Manual Raking/Pulling



- Can be fairly selective and effective if roots are removed
- Fragments must be collected
- Labor intensive
- Ongoing maintenance method

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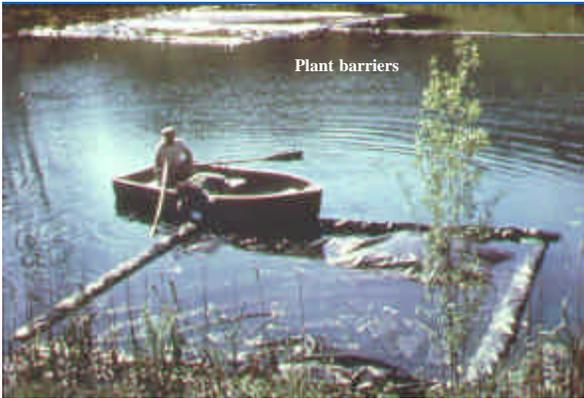
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## Mechanical Harvesting



- Quick and immediate control
- No use of pesticides
- \$200-\$400/acre
- Does take some fish, etc.
- Milfoil control lasts 2 wks
- Not applicable in shallows

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What about disposal of the cut plant material?



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## Dredging

- Environmental disruptive
- Extensive permits required
- Plant control generally a secondary benefit of project
- Must go deep enough to prohibit growth
- \$5-\$10 cubic yard or
- \$4,000 - \$8,000 to remove five feet from 5 acres



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## Drawdown



- Limited applicability
- Requires 2-3 months of freezing conditions
- Permits required
- Low cost if available
- Near shore areas only
- Environmental Impacts?



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## Chemical Treatment Criteria



- Need NR 107 compliance
- Need to assess risk to susceptible species
- Want no or little impact to majority of native species
- Need minimal water movement
- Want community consensus
- Aquatic Plant Management Plan or an Environmental Assessment may be required



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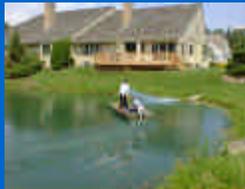
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## Selective Chemical Treatment

- 2,4-D selectively controls dicot aquatic plants
- Sonar selectively controls some plants at low concentrations
- Diquat, Aquathol-K, Endothall are broad spectrum herbicides



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## 2,4-D Specific Information

- \$300 +/- per acre
- Kills plants in 10-14 days
- Used for shoreline and cove treatments
- Water use restrictions for domestic use, irrigation and livestock watering
- Control difficult if groundwater flow present



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## Sonar Specific Information

- Cost varies \$300-\$600/acre
- Kills plants in 20-60+ days
- Restricted to cove or whole lake treatments
- In WI Requires an Aquatic Plant Management Plan
- Irrigation water use restrictions



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## Milfoil Weevil



- Commercially available from Ohio company
- Costs ~\$1/weevil, plus consulting costs
- WI weevil project not promising after 3 years
- Most useful as a long-term control method of heavy infestations

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## Weevil Specific Information

- Commercial stocking rates of 1,000 weevil/area
- Literature suggest densities need to exceed 2 weevils/stem before damage is noticeable
- WI Weevil Lakes (12 state wide): Continue to document changes in the milfoil. Some milfoil have declined even more since last year (two years after stocking)

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### Potential Success?

- Have seen some lakes where weevils have controlled EWM
  - Healthy native weevil population
  - Natural shorelines
  - No other means of EWM control in this area
- Examples
  - Manson Lake, Oneida County
  - Lake Metonga, Forest County

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First, we look for the weevils.

What do we look for?

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Weevil damage on the plant tips.

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Healthy EWM has adventitious roots. EWM with heavy weevil damage has fewer or no adventitious roots (Lake Metonga, Forest County. Summer, 1999)

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Roots of weevil damaged plant. Darker color. Uproot easier.

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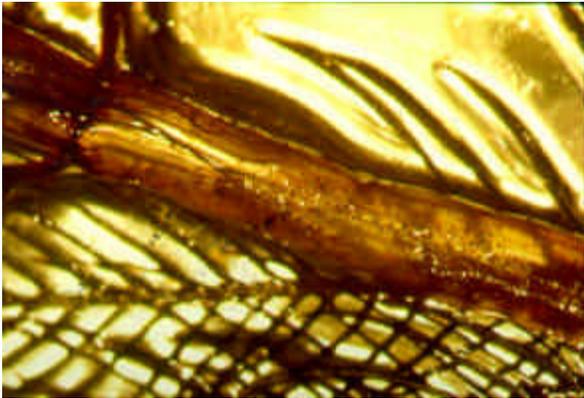
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## Weevil Augmentation

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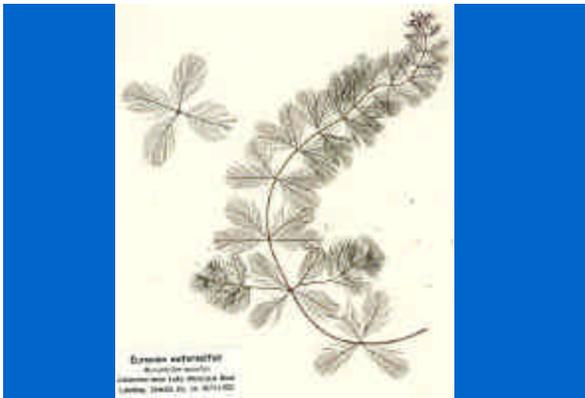
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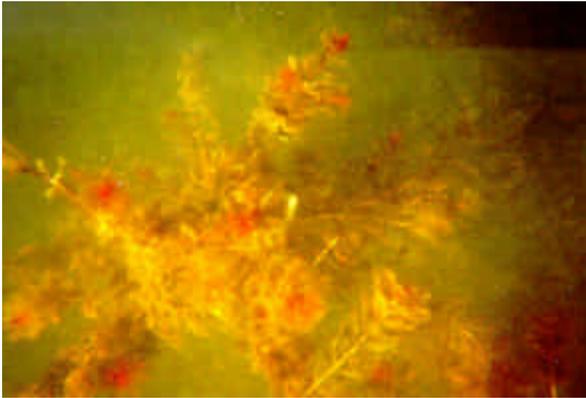
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## Secrets to Controlling EWM

- No Silver Bullet
- Develop Comprehensive Aquatic Plant Management Plan
- Build consensus for project
- Plan for maintenance and money



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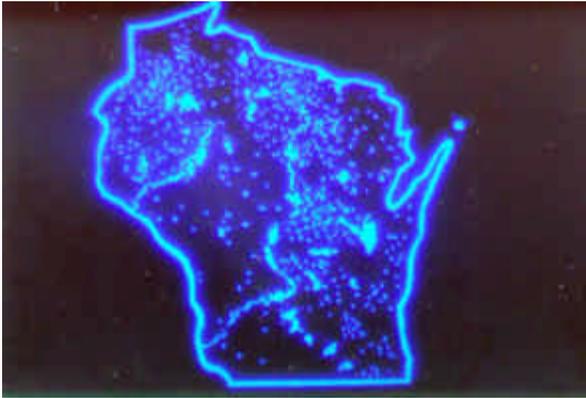
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